

MARINE REVIEW.

VOL. XII.

CLEVELAND, O., DECEMBER 19, 1895.

No. 25.

Lieut. Cavanaugh on the Subject of Lake Levels.

In these columns last week it was said that Lieut. J. B. Cavanaugh of the United States engineer corps, who is temporarily in charge of the Detroit office made vacant by the death of Gen. Poe, had been credited with saying that plans for a series of dams, intended for the purpose of raising the water levels of the lakes, were advocated by the late Gen. Poe. An article on this subject in one of the Detroit papers, several days ago, conveyed the impression that Lieut. Cavanaugh credited Gen.

to me in this article. Being fully acquainted with the views of the late Colonel Poe upon the subject of raising the level of Lake Erie by a dam in the Niagara river, I have never stated that he had advocated a series of dams for raising the levels of the great lakes. That these levels can be raised is unquestioned, but upon the methods and advisability of doing this my opinions have not been called for and, as yet, have not been expressed. Kindly correct the erroneous statements credited to me, and also advise me as to your authority for them."



CAPT. J. J. H. BROWN OF THE FIRM OF BROWN & CO., BUFFALO, N. Y.

(Prominently mentioned for the Presidency of the Lake Carriers' Association.)

Poe with favoring a dam at Niagara, or a system of dams in connecting channels of the lakes. As might be expected, however, by those who are acquainted with the views of the late Gen. Poe on this subject, Lieut. Cavanaugh now sets himself right in the matter. In a letter to the REVIEW he says:

"Please accept my thanks for the marked copy of your last issue calling my attention to the article on lake levels. I have never authorized any statements on this subject and must therefore disclaim those credited

James McBrier and others of Erie, owners of the steamer Nyanza have brought suit in the United States district court at Detroit against the steamer J. H. Devereaux, for \$41,950 damages, resulting from the sinking of the Nyanza in Mud lake, Sault river, in July last, through collision with the steamer Northern King. Owners of the Nyanza claim that mismanagement of the Devereaux, which tried to pass the Nyanza in a narrow channel, was the cause of the collision with the Northern King.

A New Dry Dock at Toledo.

The illustration shows the Shenango No. 2 in the dry dock of the Craig Ship Building Co., Toledo, the first boat that was placed in the new dock. While very little has been said about the construction of this dock, everything has been done to make it a modern dock in all particulars as well as in dimensions. The length of 450 feet is 15 feet or more in excess of the over-all length of the largest ship now under way on the lakes, and it is not likely that anything larger than 450 feet will be built for many years to come. Vessel owners will be pleased to know that there is now open a dock at Toledo that will accommodate their vessels. The dimensions are 450 feet long, 110 feet wide on top, 55 feet on the bottom and 16 feet over the sill.

Annual Meeting and Presidency of Lake Carriers.

At the meeting of the executive committee of the Lake Carriers' Association in Cleveland, Tuesday, at which it was decided to hold the annual meeting of the association at the Russell house, Detroit, on Jan. 15, quite a feeling developed in favor of having the presidency, this year, go to Buffalo, and the names of Capt. J. J. H. Brown and Washington Bullard were mentioned for the place. It is hardly probable that any of the line

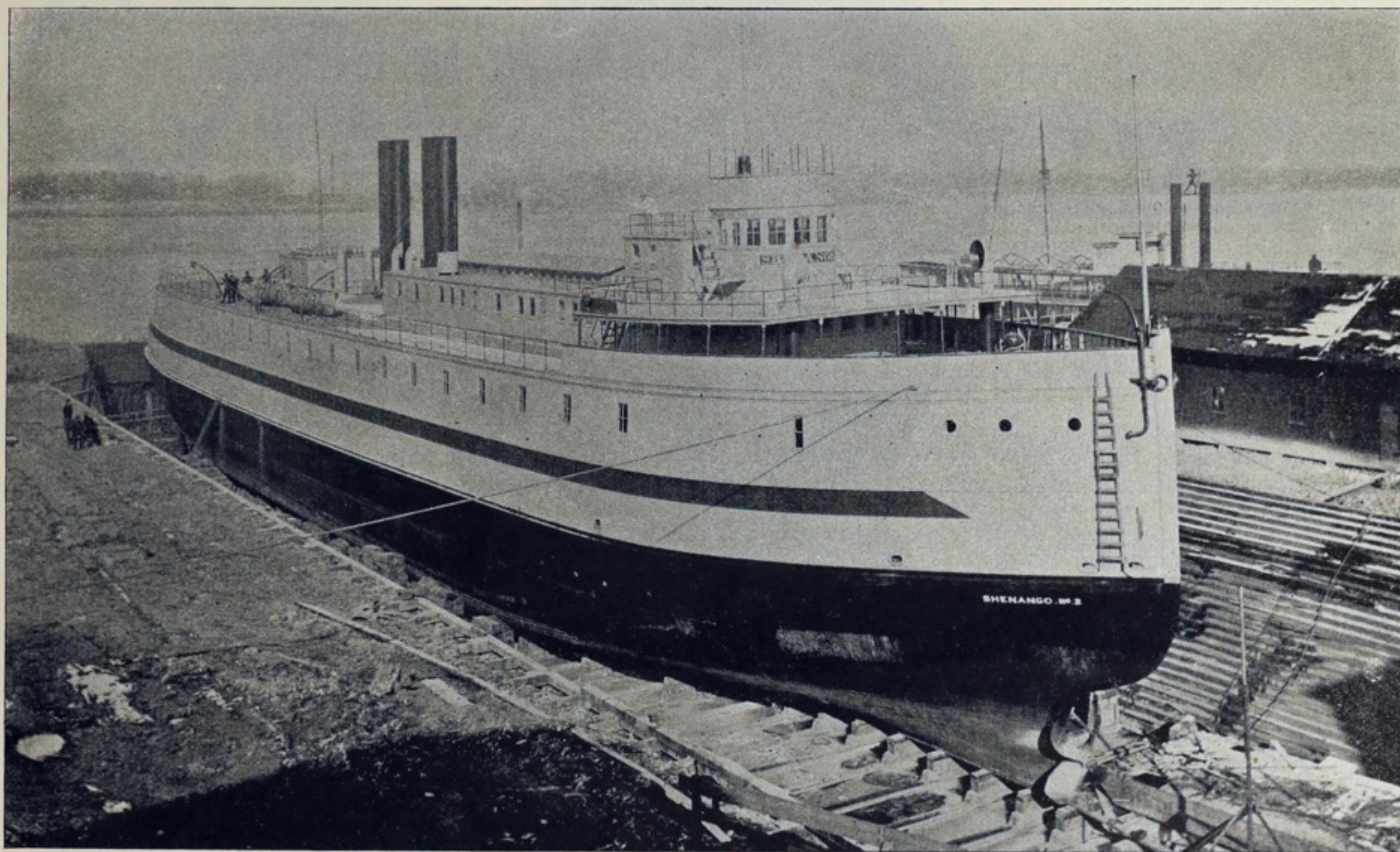
abuses attending the present libel law, which permits of irresponsible parties libeling vessels and forcing settlements on claims that are unjust.

It was also decided that as it is necessary to look to one member of congress for attention to detail in legislative matters, and as Congressman T. E. Burton of Cleveland has volunteered to give special care to affairs of the association, the secretary will communicate, as far as possible, with all members of the house from lake districts through Mr. Burton.

In General.

Foolhardy Adolph Frietsch, the Milwaukee sailor who went down the lakes, through the St. Lawrence and across the Atlantic to England, in a little sloop which he built in Milwaukee and named the Nina, suffered shipwreck recently near Glasgow and his boat was all smashed up. He announces that he will return home, however, and build a craft of some forty tons in which to make a tour around the world.

The Metropolitan Iron & Land Co., Milwaukee, Wis., operating the Norrie mines, has filled the vacancy in its board of directors caused by the death of Francis Hinton, by the election of H. S. Haselton, who is also the secretary of the company. L. J. Petit, the treasurer and a very



NEW 450 FOOT DRY DOCK OF CRAIG SHIP BUILDING CO., TOLEDO, O.

boat managers will be interested now, any more than they have been in the past, in the presidency of the association, and if the office should go to Mr. Bullard it would be through a special tender of the honor to that gentleman. It is probable, therefore, that Mr. J. J. H. Brown, who has been very active in the interests of the association, will be more likely to receive the support of working members of the organization, and he is now placed first among the several vessel owners who have been mentioned for the place.

Secretary Keep's annual report will be in print when the Detroit meeting is opened. It is the most important document to be submitted to the meeting, as it contains each year a review of the affairs of the association and includes recommendations from the executive committee to the general body. Matters to be contained in this report were talked over at the meeting of the committee. The present system of the light-house service regarding the discontinuance of lights and other aids to navigation at the close of navigation each year will be discouraged. These aids to navigation were removed in many places fully two weeks before vessels had quit running, and in some cases there was absolutely no need of discontinuing the lights so early. There is no way of placing responsibility under the present system, and the vessel owners will try to remedy this disadvantage. Mr. Goulder, counsel for the association, will also submit through the secretary's report a plan for overcoming the

large stockholder, has resigned to go abroad, and will be succeeded by John A. Whaling. Mr. Petit remains in the directory.

Lieut. Geo. P. Blow, U. S. N., has received orders detaching him from duty as officer in charge of the branch hydrographic office at Chicago and ordering him for duty on board of the United States battleship Texas. The successor of Lieut. Blow has not yet been detailed, and until he is Mr. W. J. Wilson who has been assistant in the office for some time past, will be in charge. Lieutenant Blow will leave Chicago on the 19th to join his ship. He certainly takes with him the best wishes of all vessel men on the lakes who have met him since he opened the Chicago office of the hydrographic service.

A resolution will be introduced in congress at an early date to authorize Rear Adml. William A. Kirkland to accept a present from the emperor of Germany. While at Kiel the emperor visited the New York, the flagship of the squadron, and was delighted with everything he saw, and particularly with the courtesy displayed toward him by Rear Adml. Kirkland and the officers of the cruiser. As a mark of his esteem he presented Rear Adml. Kirkland with a gold snuff box of beautiful pattern and quite valuable. Rear Adml. Kirkland has informed the navy department of the matter and has deposited the gift at the state department pending the granting of the necessary authorization by congress.

Lake Superior Commerce.

CANAL STATEMENTS FURNISH COMPLETE REPORTS OF TRAFFIC—ALL RECORDS AGAIN BROKEN—FREIGHT TONNAGE EXCEEDS FIFTEEN MILLIONS AND REGISTERED TONNAGE IS 16,806,781 NET TONS—GAIN IN EVERYTHING EXCEPTING COAL.

By adding to the traffic of the United States canal at Sault Ste. Marie this season, the business of the Canadian canal, which was open to traffic during eighty-nine days from Sept. 9 to Dec. 6, it is found that all previous records in Lake Superior commerce are again broken. The freight moved through the two canals during 1895 aggregates 15,062,580 net tons, against a movement of 13,195,860 tons through the United States canal in 1884, or a gain of 1,866,720 tons, equal to 14 per cent. The gain in registered tonnage is 3,696,415 tons, or 28 per cent. The number of vessel passages shows an increase of 24 per cent. and the lockages 20 per cent. The two canals passed this year 42,218,250 bushels of wheat and 8,062,209 net tons of iron ore, representing an increase in wheat of 33 per cent. and an increase in ore of 23 per cent. The movement of flour, which aggregated 8,902,302 barrels in 1895, was 1 per cent less than in 1894.

The only decrease of importance is in coal. Soft coal shipments to Lake Superior through the two canals foot up 2,133,885 net tons, against 2,264,314 tons in 1894, a decrease of 130,429 tons, or 6 per cent. In hard coal the shipments aggregate 440,447 net tons, against 532,870 tons, a decrease of 92,393 tons, or 17 per cent. This decrease in coal shipments may be charged to Duluth and Superior more than to the Portage lake district and other points where there has very probably been an increase. It is due to the determination of companies mining coal in Ohio and Pennsylvania not to have any surplus of coal at the head of the lakes next spring. Stocks carried over in the spring have always resulted in competition that has caused coal to be sold at prices that did not permit of a reasonable margin of profit in the business. A full statement of Lake Superior commerce follows:

COMPARATIVE STATEMENT OF LAKE SUPERIOR COMMERCE, SEASONS OF 1894 AND 1895, AS DERIVED BY COMBINING REPORTS OF UNITED STATES AND CANADIAN CANALS AT SAULT STE. MARIE FOR 1895.

ITEMS.	Designation.	SEASON.		INCREASE.		DECREASE.	
		U. S. canal, 1894	U. S. and Can'd'n. can'l, 1895	Amount.	Per Ct.	Amo'nt.	Per Ct.
Vessels (a).....	Number.....	14,491	17,956	3,465	24		
Lockages.....	Number.....	6,431	7,734	1,303	20		
Tonnage, registered.....	Net tons.....	13,110,366	16,806,781	3,696,415	28		
Tonnage, freight.....	Net tons.....	13,195,860	15,062,580	1,866,720	14		
Passengers.....	Number.....	27,236	31,656	4,420	16		
Coal, hard.....	Net tons.....	532,870	440,447			92,393	17
Coal, soft.....	Net tons.....	2,264,314	2,133,885			130,429	6
Flour.....	Barrels.....	8,965,773	8,902,302			63,471	1
Wheat.....	Bushels.....	34,869,483	46,218,250	11,348,767	33		
Grain other than wheat (c).....	Bushels.....	1,545,008	8,328,694	6,783,686			
Manufact'd and pig iron.....	Net tons.....	60,659	100,337	39,678	65		
Salt.....	Barrels.....	237,461	269,919	32,458	14		
Copper.....	Net tons.....	99,573	107,452	7,879	8		
Iron ore.....	Net tons.....	6,548,876	8,062,209	1,513,333	23		
Lumber.....	M. Ft. B. M.....	722,788	740,700	17,912	2		
Silver ore.....	Net tons.....	412	100	312		312	143
Building stone.....	Net tons.....	21,417	23,876	2,459	11		
Unclassified freight (b).....	Net tons.....	451,185	463,308	12,123	3		

NOTE (a)—Steamers, 12,495; sails, 4,790; unregistered, 671. Total, 17,956.

NOTE (b)—Included in the item of "unclassified freight" are 2,250 tons of wool and 397 tons of hides.

NOTE (c)—The item of "grain, other than wheat" in this season's report includes such eastbound grain as was heretofore reported in the item of "unclassified freight;" therefore no percentage is given.

The United States canal was opened on April 25 and closed Dec. 11—231 days, against 234 days in 1894. The Canadian canal was opened to commerce on Sept. 9 and closed on Dec. 4—87 days.

It is, of course, understood that the business of the Canadian canal, which was open to navigation for only eighty-seven days, forms but a small part of the above totals. It must be noted also that 90 per cent., or more, of the traffic through the Canadian canal was in vessels of the United States. The traffic of the Canadian canal, which is included in the above statement, is shown by the following table:

STATEMENT OF TRAFFIC THROUGH THE CANADIAN CANAL AT SAULT STE. MARIE, SEASON OF 1895—CANAL OPEN DURING EIGHTY-SEVEN DAYS FROM SEPT. 9 TO DEC. 4.

EASTBOUND.

Copper ore, net tons.....	305
Iron ore, net tons.....	216,570
Iron, pig, net tons.....	802
Wheat, bushels.....	4,539,294
Other grains, bushels.....	722,220
Lumber, feet B. M.....	12,485,141
Flour, barrels.....	165,602
Stone, lime, etc., net tons.....	3,016
Unclassified freight, net tons.....	5,611
Passengers, number.....	1,360

WESTBOUND.

Coal, bituminous, net tons.....	121,563
Coal, anthracite, net tons.....	27,810
Iron, manufactured, net tons.....	1,713
Salt, barrels.....	8,918
Coal oil, barrels.....	35,320
Unclassified freight, net tons.....	21,037
Passengers, number.....	1,169
Eastbound freight, net tons.....	419,108
Westbound freight, net tons.....	182,227
Total freight, net tons.....	601,335
Total passengers.....	2,529
Total registered tonnage.....	747,371
Total vessels passed.....	1,168

Lake Engineer in British Ship Yards.

LETTER FROM MR. WALTER MILLER OF CLEVELAND IN LONDON—TALKS WITH SHIP AND ENGINE BUILDERS OF GREAT BRITAIN—DIFFERENCE IN PRACTICE HERE AND ON THE OTHER SIDE. SOME FAMOUS OLD SHIP YARDS.

Editor MARINE REVIEW: I have had a very interesting trip so far, and have seen many things in the marine engineering line in this country that are new and widely different from our practice on the great lakes. In one respect they are like us, however, and that is each builder is quite sure that his ideas are the best and that the work turned out by his firm is giving the best satisfaction. Over here one finds all sorts of sequence of cranks, proportion and arrangement of cylinders. I found one builder who was very positive that to place the H. P. cylinder in the middle, between the M. P. and L. P. cylinder, was the correct thing, and he gave particulars from the vessel's log to prove that this was true. I called his attention to the fact that there were some good builders who placed the L. P. cylinders in the middle instead of the after end. He said that he knew that there were a few made that way but the parties who had them did not want any more of them. But I did not tell him who the builders were who arranged the cylinders on the latter plan. In fact it was the well known ship and engine builders at Dumbarton, the Messrs. Denney Bros., who are building engines from Walter Brock's designs with the low pressure cylinder placed between the high and intermediate pressure cylinders, which made a very compact engine. The former design, that is high pressure cylinder in the middle between the intermediate and the low, made a very compact arrangement as well.

Another builder was equally sure that to have the intermediate crank leading in the crank shaft sequence was the proper arrangement, instead of high, intermediate and low, or low intermediate and high, as is usually the case. I did not find any of the builders making the two-stage triple expansion engines—that is two-cylinder engines with abnormal ratios between the cylinders and using a very high steam pressure. At Dundee I found some parties—builders of stationary engines of the Corliss type—who were building engines for stationary work on this plan, and I can quite understand the reason for doing so in such cases. By the way, stationary engine builders in this country claim to have improved on the Corliss type of engines, and they say that the engines they are building are far superior to those built in America. To what extent this is true I am not able to judge, but they build some very fine large engines on the Corliss plan over here, as I have noted on several occasions.

I was much impressed with the experimental tank* at the Messrs. Denney Bros.' establishment, Dumbarton. They have a corps of experts constantly experimenting with models, to determine the power required to propel a vessel at a given speed; also to test the efficiency of single and twin-screw arrangements, and paddle wheels, their location on the hull, with and without radial paddles. This firm attaches great importance to results of these experiments, as the apparatus enabled them to jump from a speed of 15½ knots to 21 knots per hour to a certainty.

Upon inquiring at some of the prominent yards as to what extent they had adopted the channel system of construction in vessels built by them, I was surprised to learn that while some vessels had been built on that plan it had been abandoned as too difficult and expensive. In talking this matter over with one of the naval architects at the Fairfield Ship Building Co's. yard, he said that while the Campania and Lucania had frames of channel sections their use had to be given up, owing to the trouble encountered in working the channel section on the bending slabs, punches, shears, etc., and farther they had trouble with the riveters, and were compelled to give them an advance over the price paid when working on the old system.

I had expected to find many of the ship building and engineering plants old and out of date, but I found quite the contrary, for they are

*This experimental tank is illustrated and described in the REVIEW of Aug. 17, 1893, Vol. VII, No. 7.

mostly new and up to date and fitted with new and modern tools. The shops are built in long bays, one story in height without galleries. The roofs are of glass or nearly so, giving ample light, and each bay has from two to four overhead cranes of large capacity. On the Thames, however, the plants are old and out of date, and it is difficult to see how they manage to compete with the more modern plants that are to be found on the Clyde and at Belfast. The Messrs. Maudslay, Sons & Field, engineers at Lambeth, and John Penn & Sons, engineers at Deptford, have been established over a century. They are still in existence and are able to turn out as good work as the best of the big concerns. Many of the important inventions of Henry Maudslay and Joseph Whitworth are still to be seen at the Maudslay shops, as they have not as yet destroyed or cleaned out any of the old scrap or tools that have accumulated during the last fifty years. It is said of Whitworth that up to within a few years of his death he would come into the old shops and inquire about some old leading screws that had been used years ago, which none of the present employes were able to find. He could go to the place where they had been previously kept and find them. They have about a dozen of old lead screws at these works of $2\frac{1}{2}$ inches diameter and 7 to 8 feet long, with the threads cut as nearly perfect as it is possible to cut screws—some of them with threads so fine that it requires the aid of a glass to see them. There is to be seen in the directors' room at these works a working model of the first screw cutting lathe designed and built by Henry Maudslay. The Messrs. Maudslay, Humphrey and others turn out some well-designed and finely-built marine engines for the British and foreign governments.

I was permitted to look over the boiler plant of Messrs. Yarrow & Co. at Poplar and there saw the Yarrow water tube boiler in course of construction. They are a very simple and inexpensive boiler to build, but as regards efficiency and weight per indicated horse power I am not able to judge; at any rate they would be about as suitable for the navy or merchant marine service as a fine racing wagon would be for a heavy draying trade. The ship builders strike did not interfere with my trip, as the men were not called out on the Clyde until a week or more after I had been there. They were all out at Harland & Wolff's at the time of my visit there, however, but I went through the works just the same. Harland & Wolff have the largest and finest plant that is to be seen in Great Britain. The shops were full of unfinished work and the strike can not but result in very serious loss financially to both interests.

London, Eng., Nov. 18, 1895.

WALTER MILLER.

Detroit River Bridge.

Notwithstanding the fuss that is again being made in the newspapers, vessel owners are not specially worried over the fact that Senator McMillan of Michigan has again taken up in congress the matter of a bridge over the Detroit river between the city of Detroit and Windsor, Ont. This move on the part of the Michigan Central Railway and Senator McMillan had been anticipated and the vessel interests were prepared for it. The introduction several days ago of a bridge measure in the dominion parliament was preliminary to the present movement in Washington. Officials of the Lake Carriers' Association will watch the movements of Mr. Corthell and other representatives of the railway interests in Washington, but there is little fear of a bridge measure being passed, or even coming to a vote, without consideration from the war department, which has for twenty years or more upheld lake shipping interests in opposing a bridge of any kind over this important highway of commerce. Mr. Livingstone, president of the Lake Carriers' Association, has succeeded, with the aid of vessel owners in Cleveland, Detroit, Buffalo and other places, in inducing Representative John B. Corliss of Detroit, who has been entrusted with the bill in the house, to delay its introduction until plans for opposing its passage can be arranged.

Recommendations Regarding Lights Again Ignored.

When Secretary Keep met the executive committee of the Lake Carriers' Association in Cleveland, Tuesday, to make arrangements for the annual meeting, some other matters of special interest to the association were taken up, among them that of appropriations for lights, fog signals, etc. It was found that although President Livingstone and Mr. Keep had made a special trip to Washington, a short time ago, with a view to having the light-house board recommend a few lights that were of most importance, in the opinion of the vessel owners, none of these lights are contained in the estimates of the secretary of the treasury just submitted to congress. Of the lights recommended by the vessel owners the principal ones were for Middle island, St. Martin's reef, Crisp's point and Rock of Ages, Isle Royale. It will be necessary now for the vessel owners to have Congressman Burton of Cleveland, who will be asked to take charge of light-house matters, introduce a separate bill for these lights in the house and then try to have appropriations for them inserted in the civil sundry appropriation bill when that measure reaches the commerce committee of the senate, of which Senator McMillan of Detroit will, fortunately be a member in the present con-

gress. The new aids to navigation on the lakes, for which the secretary of the treasury submits estimates, are as follows. They are put down in the different districts in the order of their importance as viewed by the light-house officials:

NINTH DISTRICT—FIXED AIDS.

Manistique light-house and fog signal, Michigan—Establishing a light-house and fog signal on or near Pointe aux Barques, Lake Michigan.....	\$32,000
Menominee light and fog signal station, Michigan—Establishing a fog signal at Menominee light-station, Green bay, Lake Michigan.	5,000
Grand Traverse light and fog signal station, Michigan—Establishing a fog signal at Grand Traverse light-station, Lake Michigan.....	5,500
Escanaba fog signal, Michigan—Establishing a fog signal at Escanaba light-station, on or near Sand point, Lake Michigan.....	5,000
Michigan City light-station, Indiana—Establishing a fog signal at Michigan City light-station, Lake Michigan.....	5,500
Menasha range lights, Wisconsin—Establishing range lights on Menasha river, a tributary to Green bay, Lake Michigan.....	500
St. Joseph pierhead fog signal, Michigan—Establishing a steam fog signal on or near the north pier of St. Joseph harbor, Lake Michigan (authorized Feb. 15, 1893).....	5,000
South Milwaukee light-station, Wisconsin—Establishing a light-station at or near the north pier at South Milwaukee, Lake Michigan.....	7,500

NINTH DISTRICT—OTHER PURPOSES.

Depot for the ninth and eleventh light-house districts, Michigan—Establishing a light-house buoy depot at Scammon's harbor, Lake Huron, or at or near such other point at or near the Straits of Mackinac as the light-house board may select.....	15,000
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TENTH DISTRICT—FIXED AIDS.

Conneaut range light-station, Ohio—Constructing a beacon light at the end of the pier, and another near the shore, the two to be connected by an elevated walk on the west pier, the present lights at this station to be discontinued when the new beacons are lighted.....	2,500
Grassys island range light-station (Ecorse), Michigan—For building a dwelling for the keeper of Grassys island range, Ecorse	5,000
Carlton island light-station, New York—Establishing a light-station at or near Carlton island, St. Lawrence river (authorized Feb. 15, 1893).....	6,000
Galloo island fog signal, New York—Establishing a steam fog signal at Galloo island light-station, Lake Ontario (authorized Feb. 15, 1893).....	5,700
Grosse island north channel range light-station, Michigan—Building a light-keeper's dwelling at Grosse island north channel range light-station.....	3,500
Grosse island channel range light-station, Michigan—Building a dwelling for the light-keeper at Grosse isle range light-station, Detroit river.....	5,000

ELEVENTH DISTRICT—FIXED AIDS.

Portage lake and river lights, Michigan—Establishing lights on Portage lake, Portage lake ship canal, and Portage river, Lake Superior.....	10,500
Big Sable fog signal, Michigan—Establishing a steam fog signal at Big Sable light-station (authorized Feb. 15, 1893).....	5,500
Lake St. Clair lights, Michigan—Lighting the new dredged channel through Lake St. Clair.....	20,000
Devil's island light-station, Wisconsin—That the unexpended balance, or so much thereof as may be necessary, not exceeding \$4,000, of the appropriation of \$22,000, made in the act approved March 2, 1895, for constructing a permanent tower at Devil's island light and fog signal station, be applied to the construction of a light-keeper's dwelling at the said Devil's island light and fog signal station (authority).....	

ELEVENTH DISTRICT—FLOATING AIDS.

Poe reef light-ship, Straits of Mackinac, Michigan—Constructing, equipping and outfitting complete for service a steam light-vessel with fog signal to take place of small vessel now located at this point.....	25,000
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Total \$169,700

The Detroit river mail service has undoubtedly come to stay, and postmaster Enright of Detroit promises improvement for next season. Although the service was not begun until the latter part of June, the post office department is undoubtedly fully satisfied that it must be made a regular part of the postoffice system. In the month of November alone the receipts of the office, numbered 7,859 prices.

No Talk of Next Year's Business.

Just now all influences in the iron market seem to act against sales of ore for next year. With sales of pig iron at \$11 in the Mahoning valley, and with bar iron marked down \$3 a ton, and structural iron \$2 a ton, there is no disposition on the part of ore sales agents to try to sell ore for next year. It is well known that all of the principal ore producing companies are involved in an agreement that is intended to insure fair prices for their product, and the present would be a very inopportune time to try to force sales. The big fleet of new vessels to come from lake ship yards will certainly have a depressing effect on freights. Ore dealers who were of the opinion, some time ago, that they might be compelled to pay \$1.25 from the head of the lakes, are now basing their estimates on dollar freight. An effort was made, a few days ago, to close up some business with a Cleveland shipper at \$1.10 from the head of the lakes but it failed.

Government Engineers Seem to be Hedging.

It would seem that Senator Brice's action in taking up the subject of raising lake levels by a dam at Niagara, or by a system of dams in connecting channels, has caused the war department engineers to hedge in this matter, although any reference to the subject in the past has brought out strong opposition from them. That Senator Brice is in earnest in this matter, and is inclined to doubt the advisability of continuing the present dredging operations, which have cost millions of dollars, may be judged from a sentence contained in a letter received from him a few days ago by Secretary Keep of the Lake Carriers' Association: "The immense and ever increasing commerce of these great inland seas imperatively demands," he says, "that sufficient deep waterways be kept open between them, and the present plan of deepening and widening the channels of these waterways does not seem to meet permanent requirements."

This subject is certain to demand attention in the present congress. When Mr. Griswold, representative from Erie, Pa., tried to secure a hearing in the house a few days ago, in order to obtain from the war department whatever information the engineers may have on the matter of dams, he was desirous of reading a letter from Gen. Craighill, chief of engineers. Gen. Craighill does not seem to follow very closely the strong opposition of his predecessor, Gen. Casey, on the subject. He gave to Representative Griswold an opinion from one member of the engineer corps, Capt. Marshall, who has been connected with government works at Chicago, and who made the following report in response to an inquiry from the chief of engineers:

"Believing, as I thoroughly do believe, that the control of the level of the great lakes is the most necessary and important question that now arises and will soon confront the chief of engineers demanding almost immediate solution, I am firmly of the opinion that it is absolutely essential that the war department embark upon a thorough investigation of the physics and hydraulics of the great lakes and their outlets, including continuous and careful measurements of currents, discharges and slopes, in connection with gauged readings and accurate surveys, especially of outlets, artificial channels, etc. To control the levels of the great lakes there must be necessarily extensive damming by wing dams of the outlets excavated, when the excavations are so extensive as to modify channels to the extent demanded, or else single dams of considerable height at the foot of the slopes affected. To control the level of Lake Superior there must be a dam at the rapids at Sault Ste. Marie. To control the slopes between Huron and Erie (the improvements contemplated being made) there may be required extensive wing dams in the St. Clair and Detroit rivers, depending upon the length and extent of the excavations. To control the levels of Lake Erie there may be required dams in the Niagara river, which may also control the levels of Michigan and Huron."

It is well known that there are a great number of engineers of high standing, as well as vessel owners and others well informed in engineering matters, who have for years past opposed the government policy of dredging connecting channels of the lakes. These men present arguments of considerable merit on their side of this subject, and in some cases their opposition to the army engineers is very pronounced, as indicated by the following remarks from a prominent ship builder, who is also an owner of vessel property and who has been interested in lake shipping since the early days of navigation on Lake Superior:

"Government engineers are very expensive and notoriously impractical. Take, for instance, the case of Capt. Eads. They laughed at his ideas of improving the Mississippi river. He was forced to enlist private capital, and now the government engineers acknowledge his work as practical. It was the same with the St. Louis bridge. Piers could not be built in the river, they said, in accordance with the plans which they opposed. But the piers were built, nevertheless. It seems that the same impractical conclusions regarding work on the lakes have resulted in the bottoms of rivers being dug up and other projects undertaken at an expense of millions without any gain in the available draft for vessels. Apparently the money might have just as well been thrown

into the lake. After these immense dredging jobs are about completed, they conclude now that a dam in Niagara river will accomplish the desired result. The same thing is true in other government departments, for there is not a government ship built that could not be constructed for one-third the amount paid for it and be more efficient for the service desired."

Washington and Return.

Last week the REVIEW published an estimate of expenses from Cleveland to Washington on the Ship Masters' excursion, to attend the annual meeting, January 21. The figures were made up from the knowledge of a young man of aesthetic tastes, and included accommodations that carried too many frills for the average man. At least such is the decision reached by Capt. Wm. Mack, who has made the trip often enough to know. In company with secretary Collier he took up the matter with the railroad companies and learned that a rate of \$18, Cleveland to Washington and return, can be assured. Last winter a much lower rate was secured for a party of twenty. Therefore they have concluded to announce this as a maximum railway rate and allow the excursionists to decide as to whether they shall live on terrapin stew at \$2.50 a plate or at some good hotel for from \$2 to \$3 a day. Something can be saved by chartering a sleeper. No one should stay at home because the figures quoted last week seemed high. Even at the estimate referred to it would be a cheap excursion, but the first figures can be reduced considerably. For other particulars members can correspond with W. A. Collier, Vessel Owners' Towing Co., Cleveland, O.

Ship Yard Matters.

Another contract for a new steel vessel has been added to the large list already held by ship builders. The Union Dry Dock Co., Buffalo, will build for the Chatauqua Steamboat Co. of Jamestown, N. Y., a side-wheel steamer 215 feet long, 32 feet beam and 9½ feet depth, to cost about \$60,000.

The Montreal Transportation Co., owning the steel steamer Bannockburn, built on the Clyde, will go to England for another vessel. Capt. Gaskin of Kingston, representing this company, has gone to England to superintend the construction of a vessel somewhat larger than the Bannockburn. It will be necessary, of course, to cut the vessel in two, in order to bring her through the St. Lawrence canals. Like the Bannockburn, she will be engaged in the grain trade between Kingston and the head of Lake Superior.

The 400-foot steamer being built by the Cleveland Ship Building Co. for the Wilson Transit Co. will be named W. D. Rees, in honor of the Cleveland gentleman who has for a great number of years past been well known as an active manager of the affairs of the Republic and Lake Superior iron companies, two of the oldest concerns in the Lake Superior region. Mr. Rees has been associated with Capt. Wilson in the ownership of vessels. The honor is deserved and fitting. It is expected to launch this ship on Saturday of this week. The Zenith Transportation Co's big steamer, also under way at the Cleveland yard, will be named Queen City. Superior and Buffalo, the one a grain and flour shipping point and the other a receiving point, are thus recognized in the names of Mr. Wolvin's two 400-foot ships, Zenith City and Queen City.

A meeting of the Chapin mining Co., to act on a proposition for an increase in capital stock from \$500,000 to \$1,000,000 will be held in Cleveland Jan. 9. This change is probably prompted in part by the plans of the Chapin company to acquire and operate the Hamilton and Ludington mines.

The November number of the Journal of the American Society of Naval Engineers contains the reports of trials, conducted by naval engineers, of the lake steamships Zenith City and Victory, the former of which is fitted with Babcock & Wilcox water tube boilers and the latter with Scotch boilers, the ships being duplicates in other respects. The value of the tests was very much impaired through the water meter on the Victory giving out just before the trials began. This number of the naval journal also contains a report of a test of a Babcock & Wilcox boiler to determine evaporative efficiency.

There will be published in the hydrographic office "Notice to Mariners" for the great lakes for the month of December a reduced chart of the vicinity of Point Pelee, including Pelee passage, which has proven so dangerous to navigators on the lakes the past season. This chart is the result of the survey by the U. S. S. Michigan in August and September last. The size of the regular chart, which will be published in about three months, will be twice the length and twice the breadth of the reduced chart, which is only a photographic reproduction for the purpose of giving advanced information. It is hoped that by the opening of navigation next season the dominion government may be prevailed upon to establish an adequate system of buoyage and lighting for this vicinity.



DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O.
SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each.
Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department on June 30, 1895, contained the names of 3,342 vessels, of 1,241,459.14 gross tons register in the lake trade. The number of steam vessels of 1,000 gross tons, and over that amount, on the lakes on June 30, 1894, was 359 and their aggregate gross tonnage 634,467.84; the number of vessels of this class owned in all other parts of the country on the same date was 316 and their tonnage 642,642.50, so that half of the best steamships in all the United States are owned on the lakes. The classification of the entire lake fleet on June 30, 1895, was as follows:

Class.	Number.	Gross Tonnage.
Steam vessels.....	1,755	857,735.00
Sailing vessels.....	1,100	300,642.00
Unrigged.....	487	83,082.00
Total.....	3,342	1,241,459.00

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

Year ending June 30,	Number.	Net Tonnage.
1891.....	204	111,856.45
" " " 1892.....	169	45,168.98
" " " 1893.....	175	99,271.24
" " " 1894.....	106	41,984.61
" " " 1895.....	93	36,353.00
Total.....	747	334,634.28

ST. MARY'S FALLS AND SUZ CANAL TRAFFIC.
(From Official Reports of Canal Officers.)

	St. Mary's Falls Canal.			Suez Canal.		
	1894.	1893.	1892.	1894.	1893.	1892.
No. vessel pass'ges	14,491	12,008	12,580	3,352	3,341	3,559
T'n'ge, net registd	13,110,366	9,849,754	10,647,203	8,039,106	7,659,068	7,712,028
Days of Navigat'n	234	219	223	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

MAJOR J. C. POST, corps of engineers, U. S. A., who comes from Portland, Ore., to succeed the late Gen. O. M. Poe in charge of the new Sault canal lock, 20-foot channel and other improvements, seems to be entirely fitted by experience for the position. He graduated from West Point thirty years ago and has been in charge during that time of the construction of fortifications and the improvement of rivers and harbors on the south Atlantic coast, including South Carolina, Georgia and Florida. He has also been in charge of the improvement of rivers in West Virginia and Kentucky. From 1887 to 1889 he was principal assistant to the chief of engineers in Washington and had charge of the division of the office of the chief of engineers pertaining to the improvement of rivers and harbors and the bridging of navigable rivers. From 1889 to 1894 he was military attache of the United States embassy in London, England, and from 1894 up to the present time he has been in charge of the improvement of the Columbia river, Oregon, from the Dalles to the mouth, including the base railway at the Dalles, the locks at the Cascades, the channel between Portland and the sea, and the bar at the mouth of the river. The latter work has just been completed, with an increase of depth from 20 to 30 feet at low water. Major Post was also engineer of the thirteenth light-house district while at Portland. Major Post will be in direct charge of the big lake improvements. His position is subordinate to but distinct from that of Col. Henry M. Roberts who was a few days ago appointed to succeed Gen. Poe in charge of the northwest division, comprising everything east of the Rocky mountains and north of the Ohio river. Col. Robert's position is one of inspection. It includes supervision in that sense over the districts of nine resident colonels, engineers and captains, situated in a large number of the northern and northwestern states and territories. Col. Roberts has been a member of the engineer corps for nearly forty years.

SENATOR McMILLAN of Michigan is to be a member of the senate committee on commerce, of which Senator Frye is again the chairman, and which has to do with practically all legislative matters in the senate in which vessel owners are interested. As a member of this committee Mr. McMILLAN can render valuable aid to the vessel interests of the lakes. There are, however, two important matters to come before the present congress on both of which Mr. McMILLAN is not in accord with the vessel interests. Both must come before the senate committee on commerce.

One is the Detroit river bridge matter and the other is the subject of raft-towing regulations for the lakes. On the bridge question, Senator McMILLAN is thought to be entirely opposed to the vessel owners, as his name has in the past been connected with a bridge company. In the matter of raft towing regulations, however, his influence on the committee, no matter which side may have his vote, will hardly be sufficient to defeat the vessel owners, as their arguments and support from the war department engineers are conclusive proof of the absolute need of legislation on this subject. Let it be hoped, therefore, that the Michigan senator in his new position will find opportunities to be of even far more assistance to lake shipping than he has been in the past.

SENATOR McMILLAN will undoubtedly take a special interest in the bill which he has introduced in the senate, to grant a pension of \$100 a month to the widow of the late Gen. O. M. Poe. The question of pensions in the government service has not met with a great deal of favor in these columns, but this is certainly an exceptional case. Gen. Poe's services to the government were not confined to his great work as an engineer during time of peace. He was a soldier during the late war and his record then, as well as during the latter years of his life, was one of distinction.

THE ACTION of Mr. Haggart, Canadian minister of railways and canals in ordering work on the St. Lawrence canals continued during the winter, for the purpose of having the greatest possible depth of water available next year, is undoubtedly prompted by the ready manner in which New York state officials are proceeding with the work of improving the Erie and other canals in that state. It is understood that the letting of contracts for the expenditure of \$9,000,000 in enlarging New York state, canals simply awaits the completion of specifications in the office of the state engineer.

VESSEL OWNERS are fortunate in having assurance from Congressman T. E. Burton of Cleveland that he will take special interest in all legislation pertaining to lake shipping. Mr. Burton's knowledge of congressional routine, gained in his first term, will be of valuable assistance, and it is quite probable that there is no other member of the present house who is as well posted as he is regarding the lake marine.

Facts and Figures Worth Noting.

The steamer Linden was the last vessel to pass through the St. Mary's Falls canal in 1895. The canal opened on April 25 and closed on Dec. 11, making the season of navigation to and from Lake Superior 231 days, against 234 days in 1894.

The first vessel to pass through the Straits of Mackinac in 1895 was the steamer J. D. Marshall, which passed down at 6 o'clock on the morning of April 11. The last vessel through the straits, bound down, and the last vessel to leave Chicago for a lower lake port, was the steamer Gladstone, which passed Mackinaw at 3:30 p. m. on Dec. 13. On the following morning, the 14th, a fleet of eight or nine vessels bound up Lake Michigan, the last of the coal fleet, passed Mackinaw with the Madagascar bringing up the rear.

The first vessel to arrive in Duluth in 1895 was the steamer Nicholas on April 30. The Nicholas was not the first vessel to reach the head of Lake Superior, however, as the Selwyn Eddy had arrived at Ashland at 10:30 p. m., April 29. The last vessel to leave Duluth was the steamer Linden, which did not get away until Dec. 9.

High Living on the Charles A. Eddy.

Profitable freights caused high living on some lake freight steamers during the latter part of the season just closed. Following is a copy of the printed bill of fare gotten up on Thanksgiving day for the steamer Charles A. Eddy, of which S. Stratton is master and H. H. Renolds steward: Oysters raw and oyster stew. Fish—Boiled trout, egg sauce. Relish—Michigan celery, lettuce and queen olives. Roast—Sirloin beef with brown gravy, young turkey with cranberry sauce and fricassee chicken on toast. Salad—Cabbage. Vegetables—Boiled potatoes, mashed potatoes, sweet corn, pickled beets and lima beans. Dessert—English plum pudding with brandy sauce, mince pie, green apple pie, pumpkin pie, assorted cake, mixed nuts, oranges, bananas, American cream cheese, tea, coffee and milk.

Notwithstanding the large amount of work already on hand at the ship yard of the Globe Iron Works Co.,—four big ships—that company will also make a strong effort to secure the contract for a fleet of steel canal barges, upon which the Cleveland Steel Canal Boat Co. has asked for bids. Managers of the canal boat company also expect bids from the Union Dry Dock Co. of Buffalo, Craig Ship Building Co. of Toledo, and the Harlan & Hollingworth Co. and Lewis Nixon on the coast.

ALL NEW HYDROGRAPHIC CHARTS ARE KEPT IN STOCK BY THE MARINE REVIEW, 516 PERRY-PAYNE BUILDING, CLEVELAND.

Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM
LATEST PATENT OFFICE REPORTS.

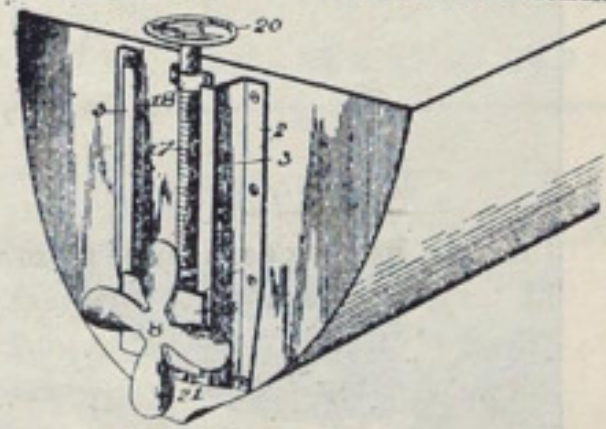
550,983. Boat-Propeller Attachment. Albert H. Loeb, Rochester, N. Y.
Filed May 28, 1895. Serial No. 550,990.

Claim. The combination of a vertical guide having opposite flanged plates, a guide-block grooved at its sides to engage said flanged plates, an adjusting screw mounted in a fixed bearing and mounted in an opening in said guide-block, a propeller wheel having its hub mounted in a bearing in the guide-block and headed to prevent axial movement, a propeller shaft mounted for longitudinal movement in its bearings and provided with a stud for detachably engaging a socket in the hub of the propeller wheel, and means for moving the shaft longitudinally and locking it in its adjusted positions.

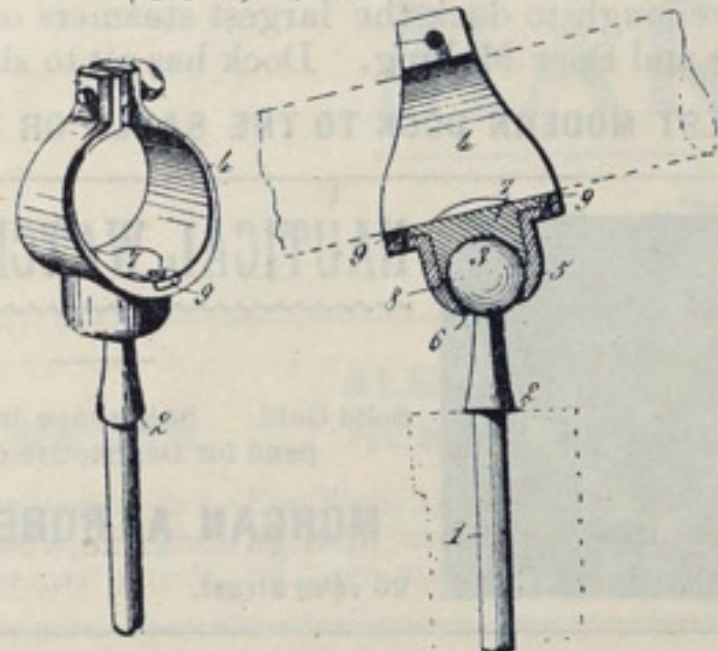
551,081. Marine Life-Saving Apparatus. Jas. A. Guest, Washington, D. C., and James H. Bates, Hoboken, assignors to the Guest-Bates Marine Life-Saving Appliances Company, Hoboken, N. J. Filed Aug. 8, 1894. Renewed Oct. 5, 1895. Serial No. 564,814.

Claim. In a life buoy, the combination of a frame, a float carried by and moveable relatively to the frame, an oil receptacle carried by one of said parts, and a closure for the receptacle, connected with the other of said parts, substantially as described, whereby the movement of one part

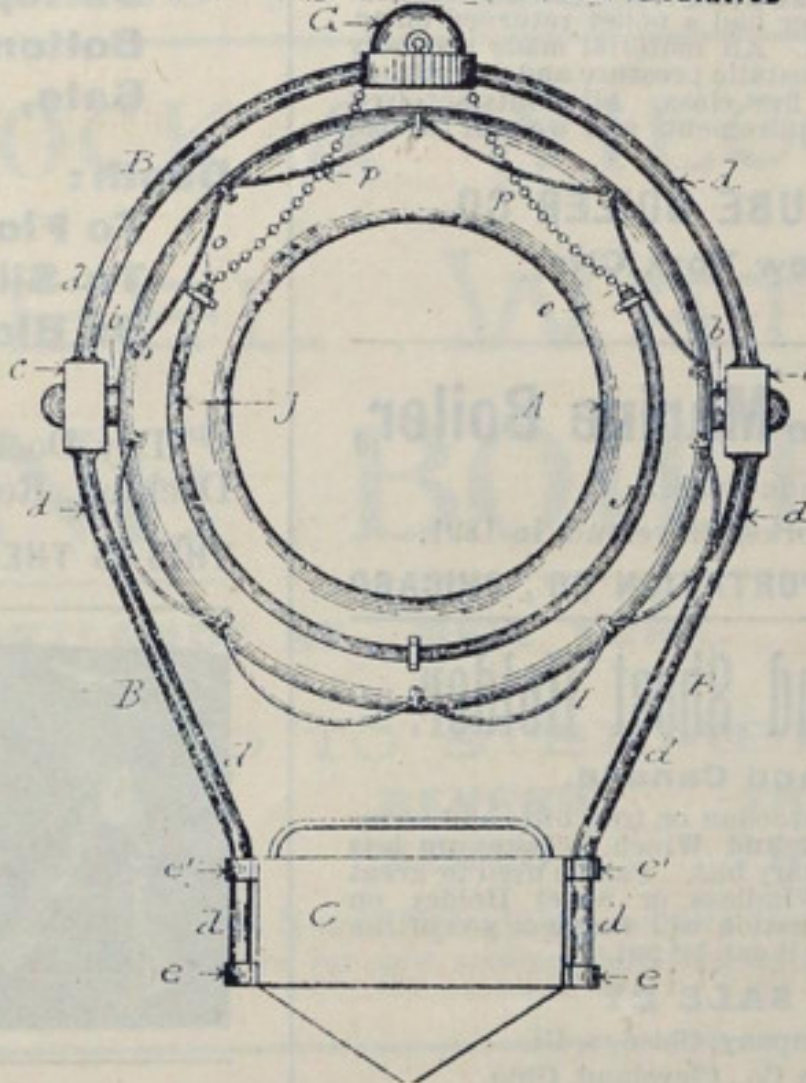
550,983. BOAT-PROPELLER ATTACHMENT.



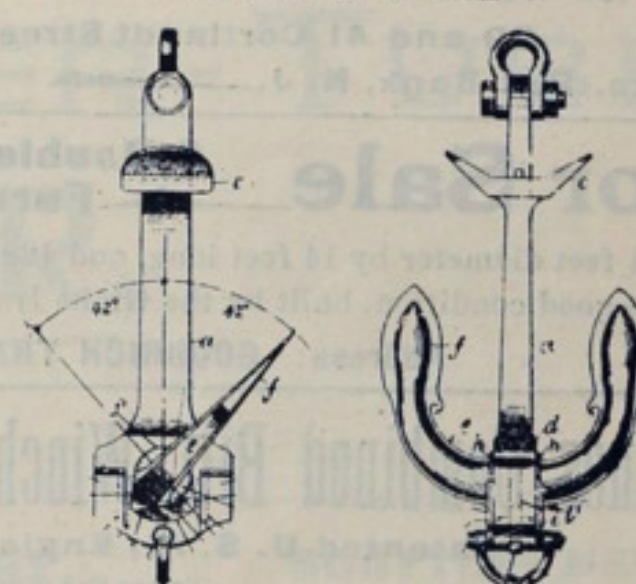
551,265. OARLOCK.



551,081. MARINE LIFE-SAVING APPARATUS



551,125. ANCHOR.



relatively to the other in assuming their operative positions, is caused to open the closure and permit the oil to flow from the receptacle.

551,125. Anchor. George H. Langley and William T. Honess, London, England; said Langley assignor to said Honess. Filed June 28, 1895. Serial No. 554,330. Patented in England Nov. 7, 1891, No. 19,272, and Oct. 8, 1894, No. 19,067.

Claim. The combination with the central portion of the two arms of an anchor, of a pair of angular projections side by side, with a space between them, abutments forming part of the surface of the shank eye adapted to limit the motion of the said pair of projections in either direction about their axis and means extending into said space to hold the projections in place within the eye.

551,265. Oarlock. Willis E. De Riar, Stryker, Ohio. Filed Oct. 5, 1895. Serial No. 564,758.

Claim. An oarlock, consisting of a shank adapted to be inserted into a boat gunwale and formed at its upper end into a ball, the tholes formed at their lower meeting points into a half-socket adapted to receive the ball therein, and a retaining plate removably secured in the upper part of said half-socket and adapted to form the upper half of the ball socket.

According to the latest statistics the German merchant sea-going navy now comprises 3,665 vessels, with an aggregate tonnage of 1,553,902 register tons. Of this number 2,622 are sailing vessels and 1,043 steamers. The latter have an aggregate tonnage of 893,046 register tons, the crews amounting to 25,199 hands. On the North sea coast are 2,645 vessels, including 653 steamers; and on the Baltic coast 1,020 vessels, including 390 steamers.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on Dec. 14, 1895:

	Wheat, bushels.	Corn, bushels.
Chicago.....	21,122,000	828,000
Duluth.....	6,025,000
Milwaukee.....	739,000
Detroit.....	375,000	4,000
Toledo.....	1,044,000	111,000
Buffalo.....	3,725,000	233,000
Total.....	33,030,000	1,176,000

As compared with a week ago, the above figures show at the several points named an increase of 1,960,000 bushels of wheat and 38,000 bushels of corn.

Trade Notes.

The Berlin Iron Bridge Co. of East Berlin, Conn., have just completed for the Standard Oil Co., at Constable Hook, N. J., a compounding building 120 feet wide by 130 feet long. The roof trusses are composed of steel, with steel purlins, and covered with galvanized, corrugated iron.

Alkali water purifier is well known to a number of lake engineers

and they know that it does its work of preventing scale, but some compounds will do this and also act chemically upon the boiler. The chemical laboratory of the University of Michigan has, after examination, passed the following verdict on the alkali purifier: "It contains nothing which can corrode or act upon the iron in any degree whatever." Full information will be furnished by J. H. Parsons Chemical Co., 1510 Masonic Temple, Chicago.

The growth of the business of the American Ball Nozzle Co. has necessitated the establishment of a western branch in Chicago, of which Mr. F. A. Curtis, formerly of the New York office, is manager, with headquarters in the Marquette building. The efficiency of the ball nozzle is indicated by the strong indorsements received from various sources where its merits have been put to the test. According to Chief Bonner of the New York fire department, on whose recommendation the ball nozzle was added to the equipment of the department, it is destined to work a radical and very beneficial change in present methods of fighting fire.

Letters bearing the following names await owners at the marine post office, Detroit, Mich.: Charles Adams, S. K. Baken, Capt. Herman Bennett, W. G. Boucher, Chas. Butler, Frank Cash, A. R. Crock, Capt. Geo. B. Davis, Geo. L. Deegan, Wm. E. A. Donaldson, Thos. Elliot, Harry Farrel, Wm. S. Hawkins, J. W. Heathcotte, Lewis Hirtes, Herbert E. Hill, Thos. Humphrey, Louis Lablanc, Eamel Mattetell, Mrs. Maggie Miller, Mr. Jno. P. Morris, J. J. Murnan, Edwin Myers, W. Stanley McQueen, Sylvester McDonald, Allen H. McLean, Ira Nelson, 2, John Parker, Tiber Salvesen, Geo. H. Smith, Capt. L. H. Smith, James P. Smith, Jas. S. Taylor, Capt. P. Telfer, Julius Wagner, M. Worn, Capt. of Sch. Dauntless.



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For Sale A Double Furnace Marine Boiler,

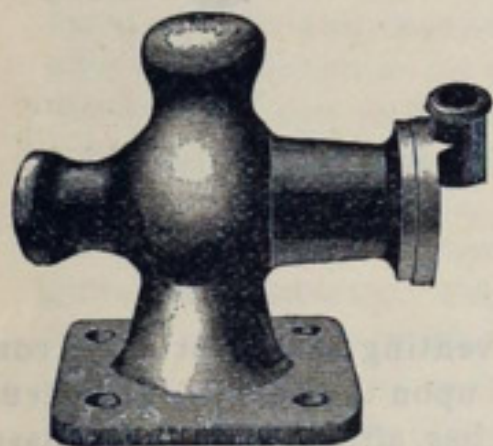
11 feet diameter by 14 feet long, and 120 pounds steam.

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Patented U. S. A., England and Canada.



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Width:

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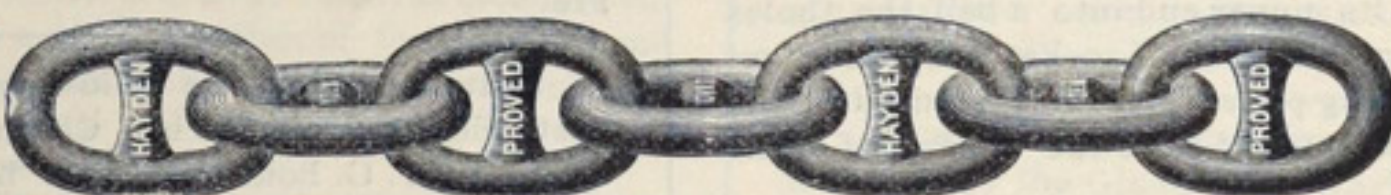
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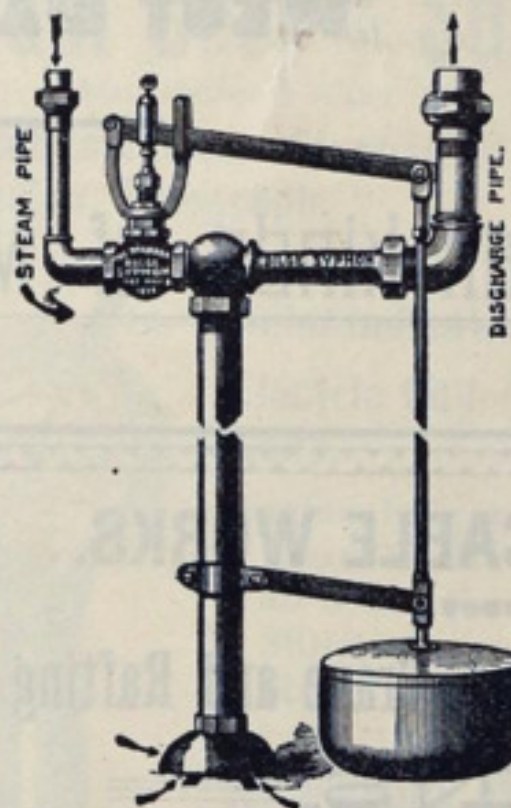


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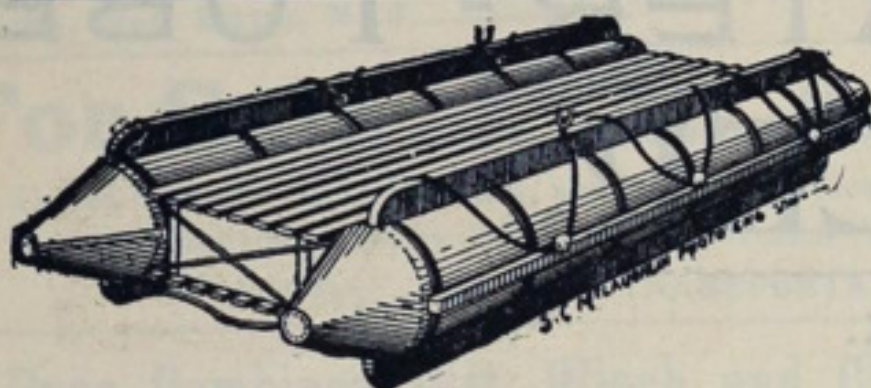
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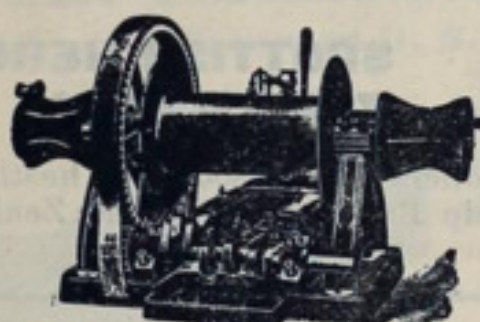
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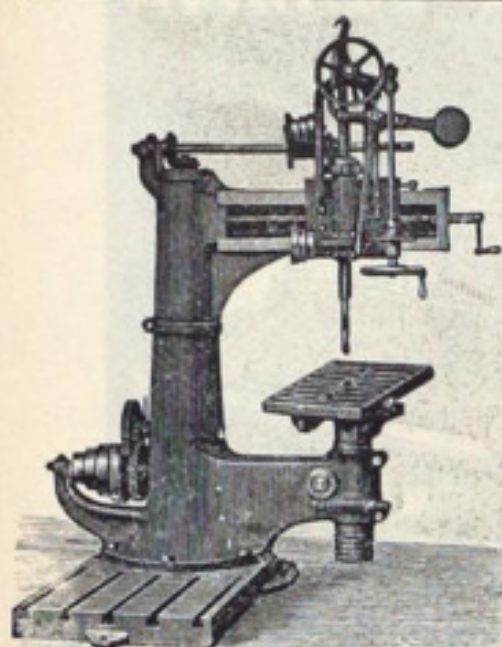
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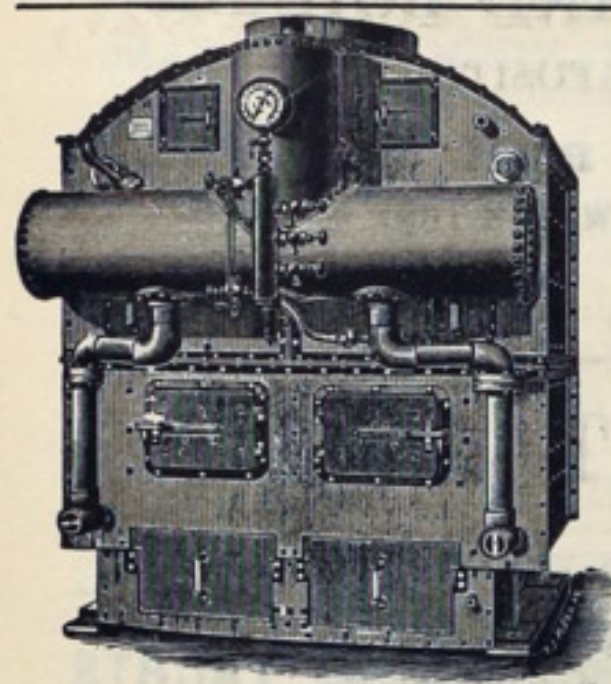
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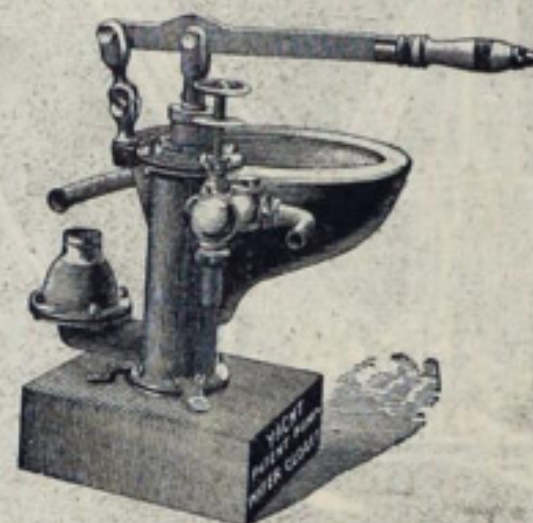
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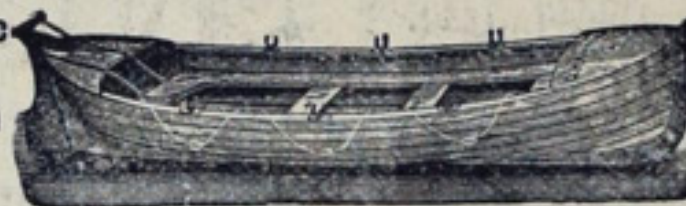
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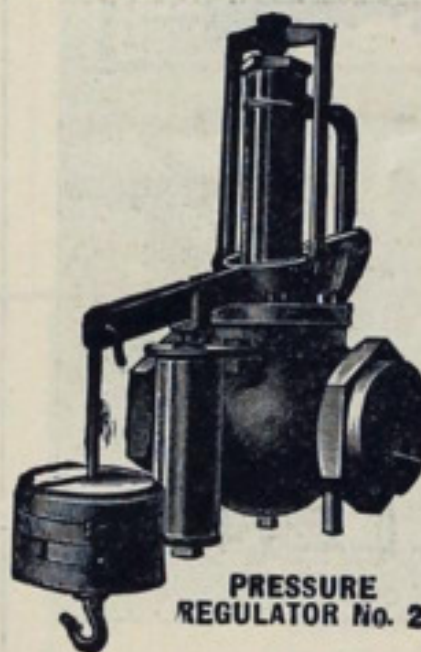


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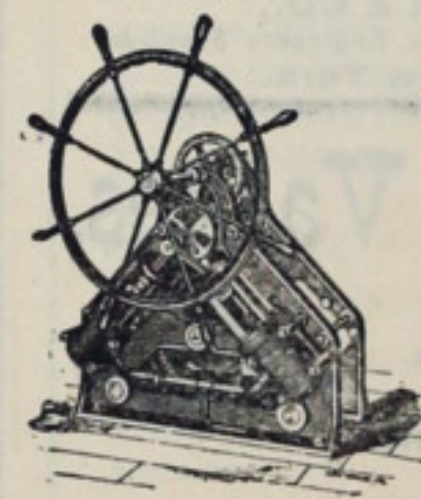
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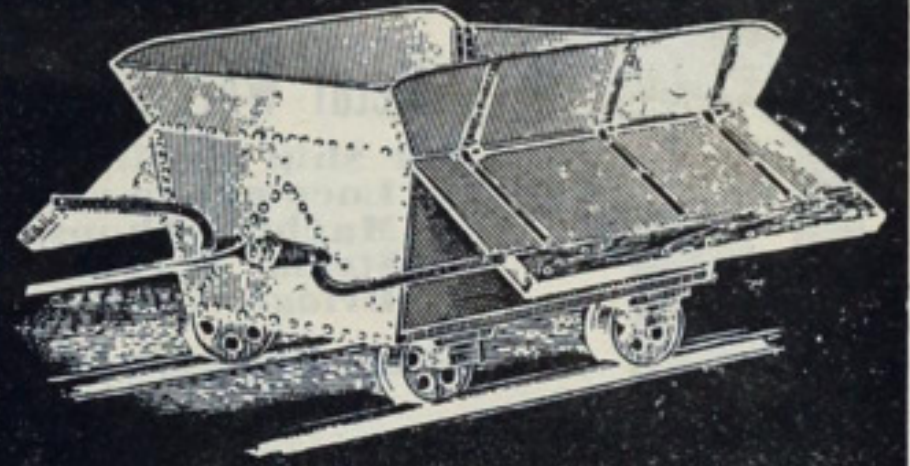
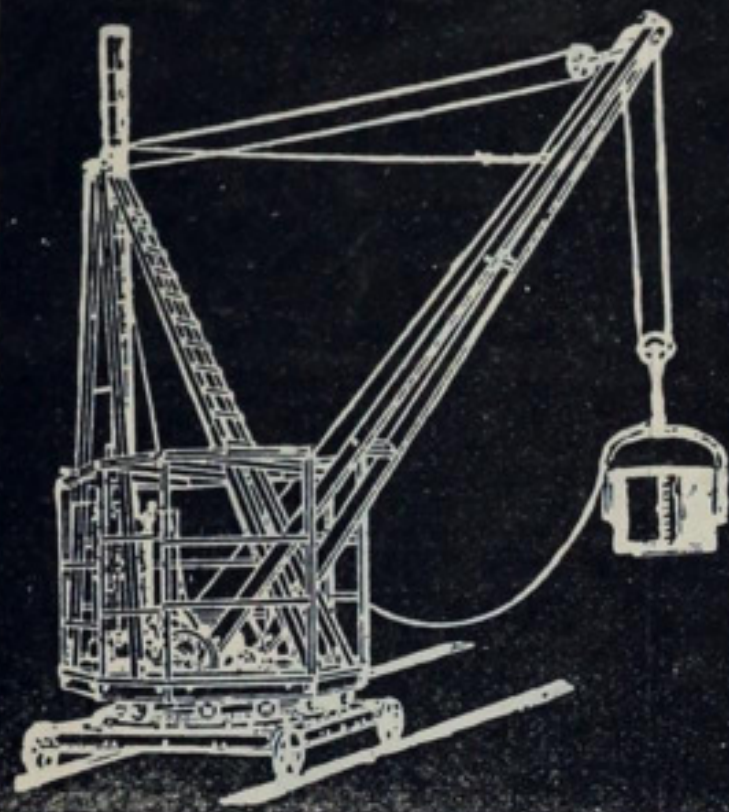
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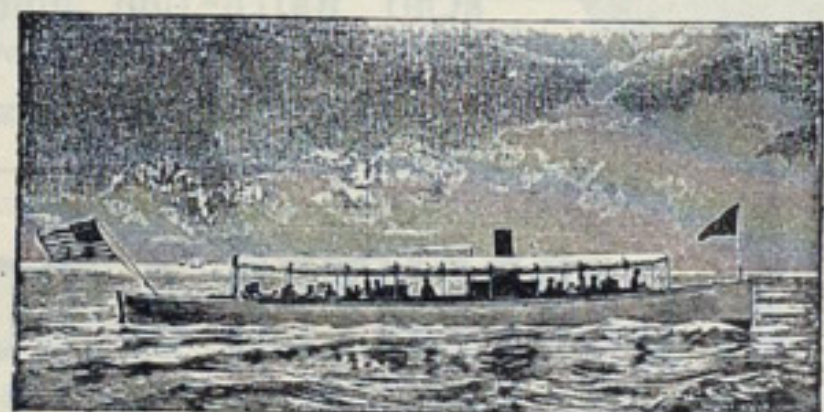
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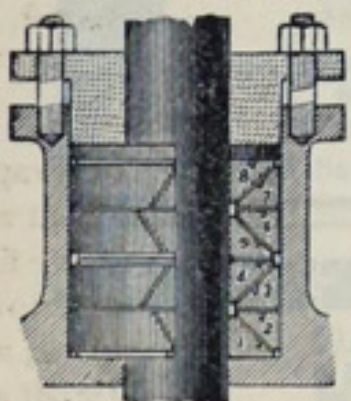
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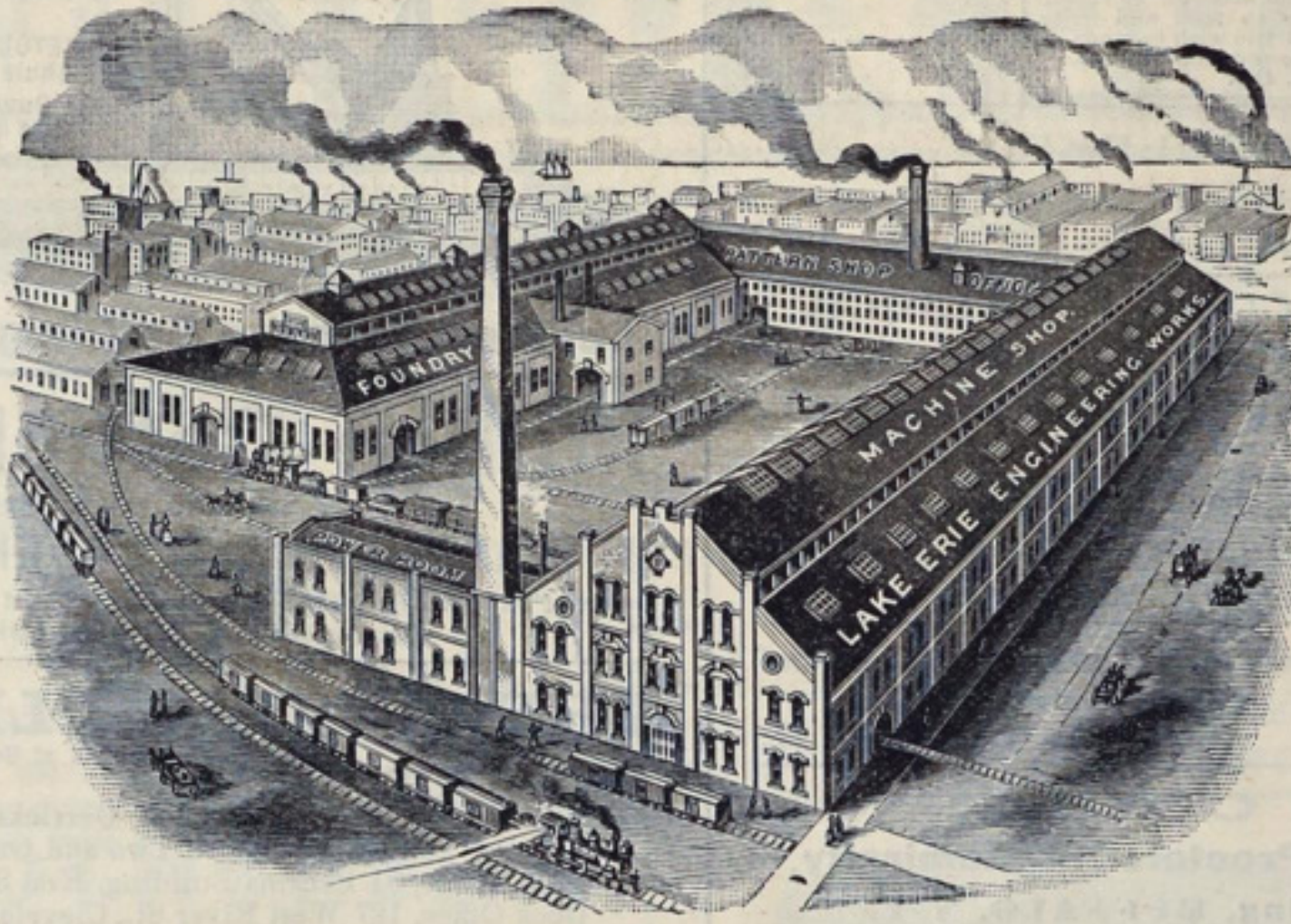


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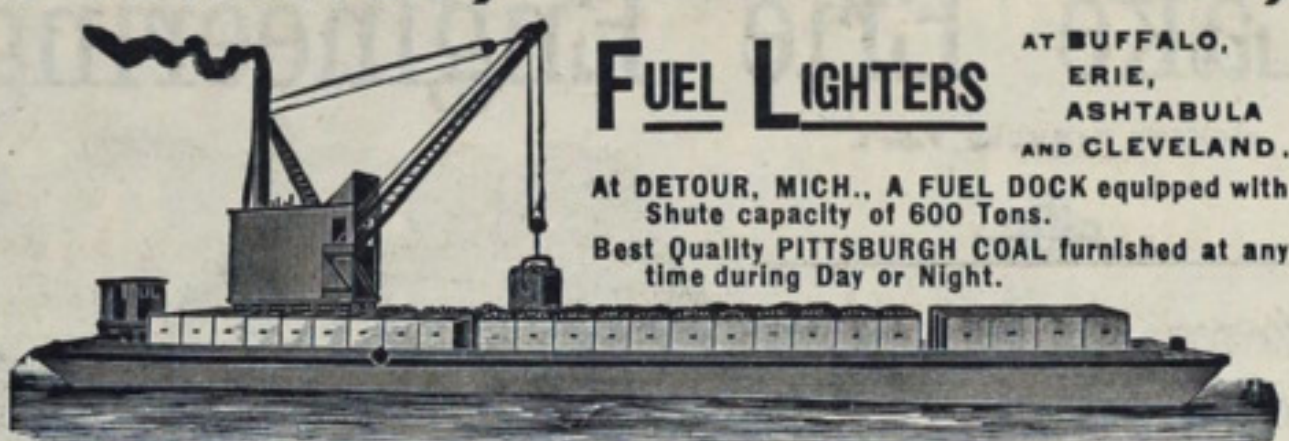
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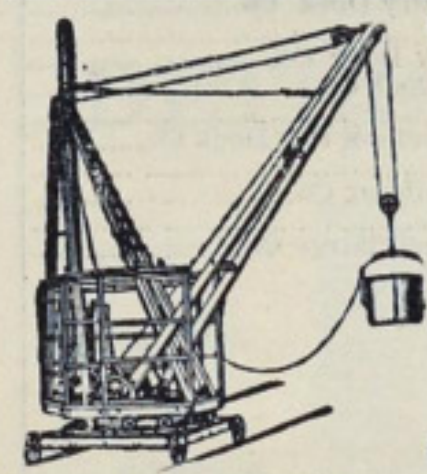
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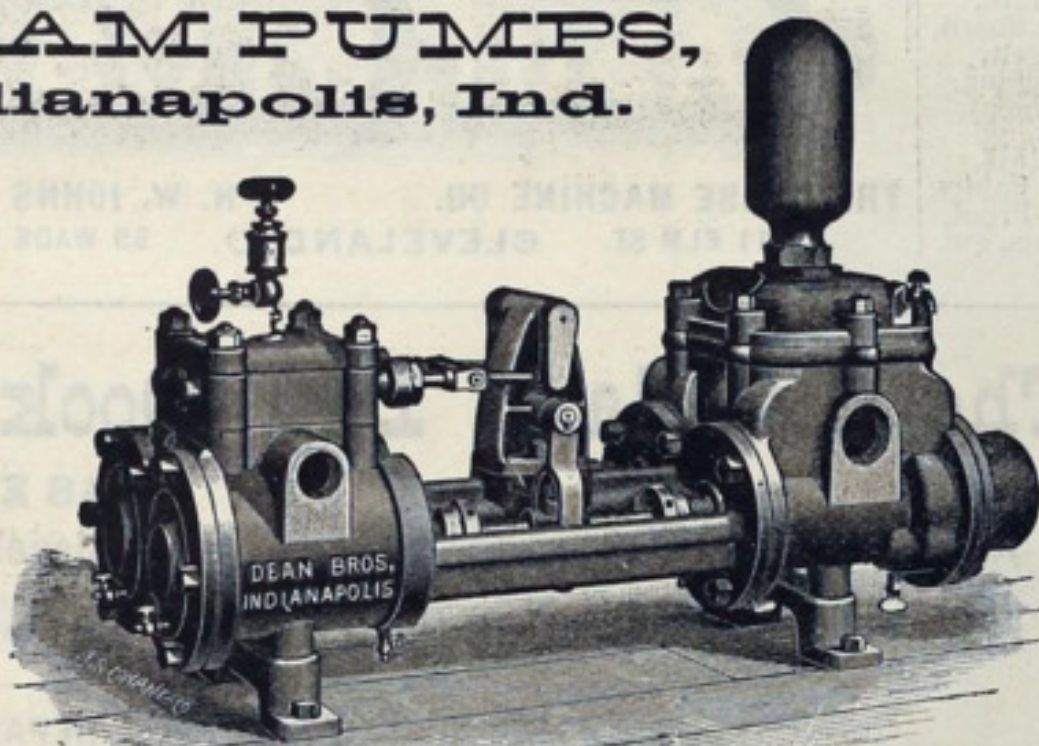
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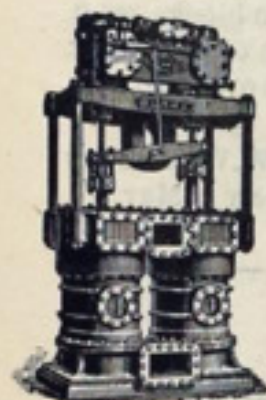
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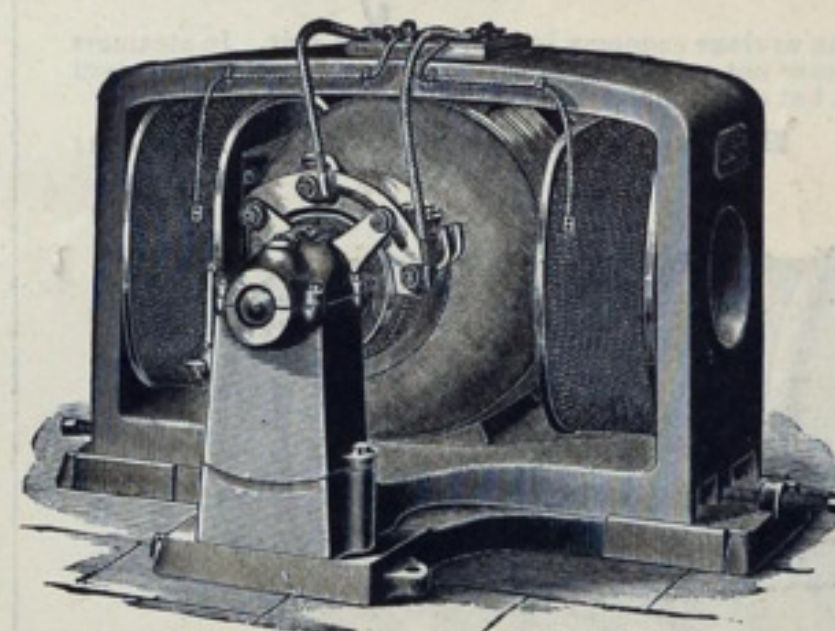
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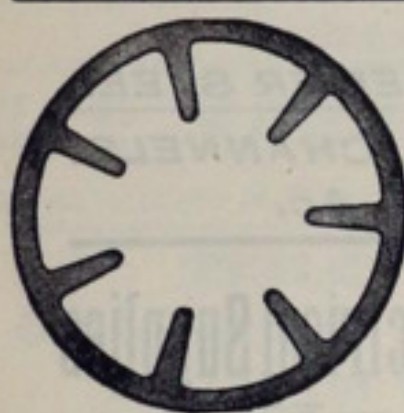
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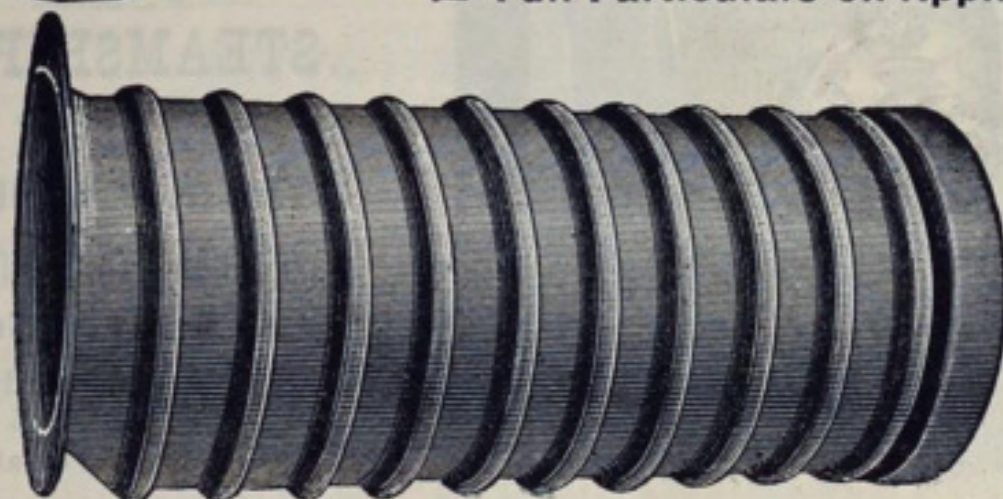
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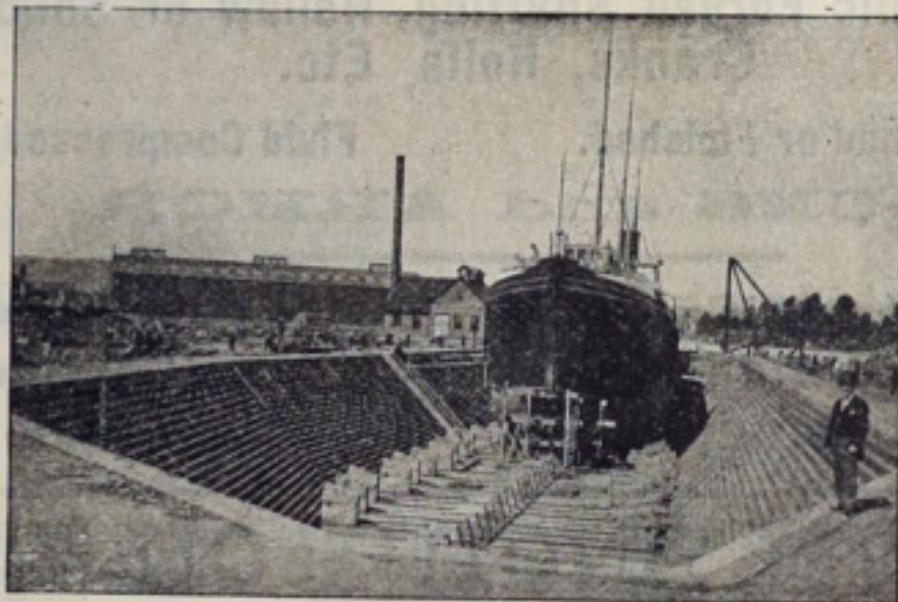
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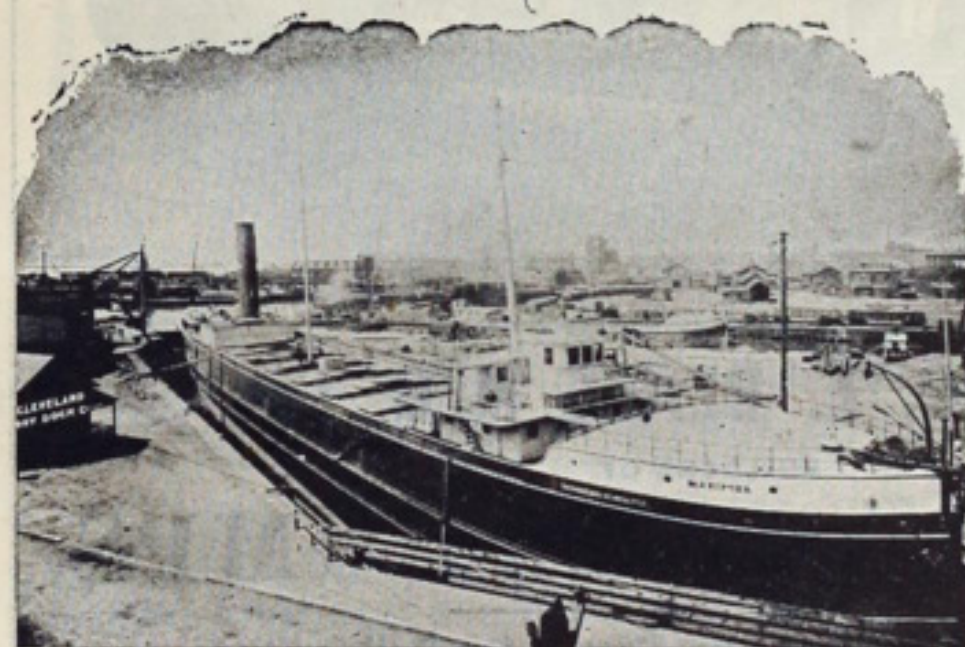
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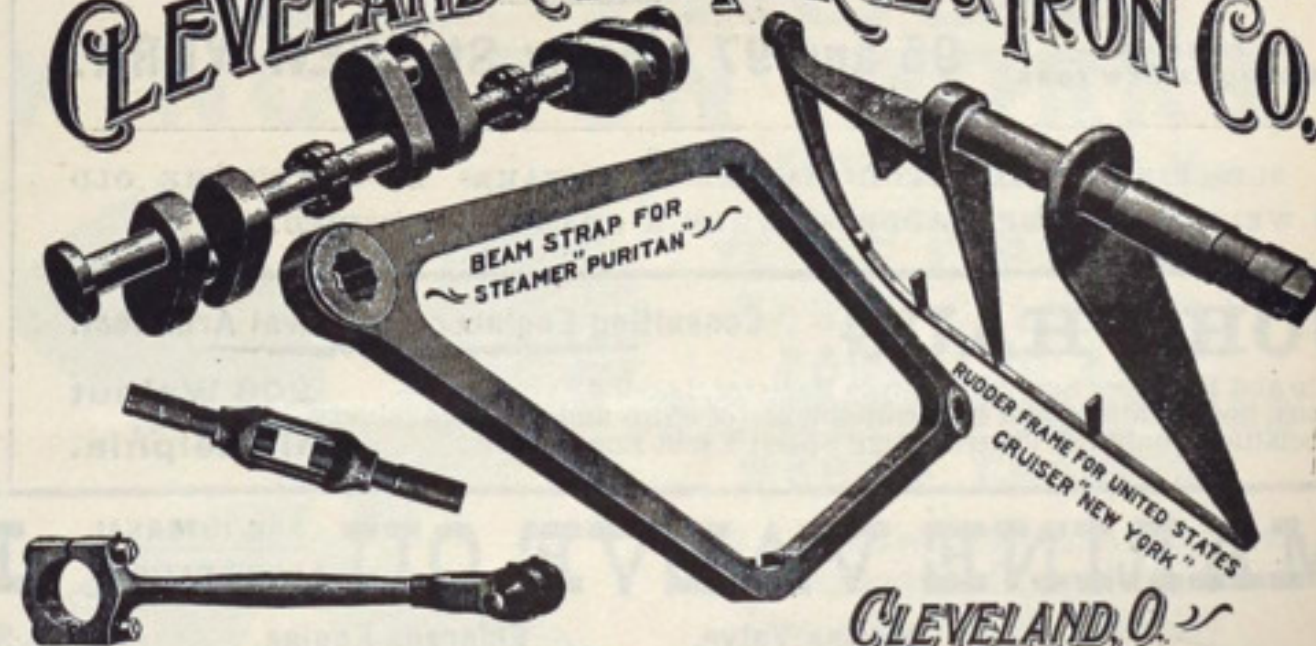
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